REMARKS

Favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

A. Examiner Interview Summary

Initially, the Applicant wishes to thank Examiner John Brusca and Supervisory Examiner Ardin Marschel for their courtesy and assistance provided to Professor Southern and his representatives during the personal interview held on June 9, 2006. Each of the grounds of rejection set forth in the Official Action were discussed during the interview. The Examiner indicated that the objection to the Information Disclosure Statements filed on 08 December 2005 and 20 December 2005 is withdrawn. The Applicant acknowledges with thanks the indication of the Examiner that he will consider the cited references. In addition reasons were discussed why the pending and amended claims do not interfere U.S. Patent No. 5,744,305 within the meaning of 37 C.F.R. 41 et al. The discussions are described hereinbelow in more detail.

The foregoing amendments clarify claims 17 and 29 to make clear that the terminal nucleotide is directly bound to the support surface, usually through a linker, in response to the Examiner's question raised during the interview. Claims 19 and 28 are amended to replace the Greek character for micron with the word micron. Claim 26 is amended to insert the recitation that the oligonucleotides contain "predetermined" sequences so as to correspond to the wording of claim 17. The term "predetermined" corresponds to the same claim recitations found in the independent claims of U.S. Patent No. 5,700,637 and U.S. Patent No. 6,054,270. Such claim recitations were added to the claims of the '637 and '270 patents after interviews with Examiner Ardin Marschel in each application. In those applications the Examiner had contended that the former claim recitation regarding the oligonucleotides having "defined" sequences may have been indefinite in that any polynucleotide sequence is inherently capable of being defined. The Examiner agreed that the recitation of the oligonucleotides having predetermined sequences was definite and helped to define over the prior art. As stated in the reasons for

allowance by the Examiner in the application issuing as the '270 patent, "... the phrase "predetermined sequences" ... is interpreted to require that the complete sequence of each and every oligonucleotide probe on the array surface is known during the practice of the instant claim steps." A copy of the Examiner's Reasons for Allowance in the '270 patent is enclosed for the Examiner's convenience.

Claims 35, 36, 39 and 40 are amended so as to be directed to a single embodiment.

New claims 41-44 are directed to the cancelled embodiments in claims 35-36 and 39-40.

B. Responsive to the Official Action dated February 10, 2006

Turning to the Official Action, claims 17-19, 21, 23, 26-30 and 33-40 are provisionally rejected on the ground of obviousness-type double patenting over claims 22-48 of copending application Serial No. 10/115,077.

As discussed during the interview, Applicant respectfully requests that this provisional ground of rejection be held in abeyance until all other grounds of rejection are deemed to be overcome.

Claims 17, 21, 33, 35 and 36 are rejected under 35 U.S.C. 103 as unpatentable over U.S. Patent No. 4,994,373 to Stavrianopoulos et al. in view of WO 85/01051 to Molecular Biosystems. (Please note that the reference number is incorrectly recited as WO 85/01050 in the Action). This ground of rejection is respectfully traversed as discussed during the interview.

The cited references fail to disclose or suggest the pending claims. Each of the pending claims require that the oligonucleotides of the array have predetermined sequences. Such feature is neither disclosed nor suggested by the cited references.

The cited Stavrianopoulos patent (U.S. 4,994,373) describes products in the opposite orientation i.e. where a nucleic acid to be analyzed is immobilized on a support and a nucleic acid with a known sequence is applied to the immobilized sequence (a "target down" assay). None of the products disclosed by Stavrianopoulos has an immobilized oligonucleotide with a predetermined sequence. The immobilized sequences in the Stavrianopoulos method are the analyte having an unknown sequence rather than

the known oligonucleotide. In contrast, in the instant invention, the complete sequence of each and every useful immobilized oligonucleotide probe on the array surface is known.

Moreover, where Stavrianopoulos mentions a "parallel" analysis system, the analyte sequences are immobilized in different reaction containers e.g. different wells of a microtitre plate. The Applicant does not agree that different wells on a plate would be "an impermeable surface" of a support; rather, they are separate surfaces. For example, a sample applied to one well would not be able to hybridize to nucleic acids in another well, because the immobilized nucleic acids are on separate surfaces. The claims would encompass a situation where an array of multiple different sequences was immobilized within a single well of a microtiter plate, such that a sample could hybridize to multiple oligonucleotides within a single well, but they do not encompass the situation where (as disclosed in Stavrianopoulos) there is a single immobilized sequence per well.

It was discussed during the interview whether adding a recitation that the surface is "planar" or "flat" might help to distinguish the claimed apparatus from Stavrianopoulos. However the Examiner raised doubt whether such recitations would clearly distinguish over the wells of the reference in view of the lack of precision of the terms. Accordingly, such potential amendments have not been effected, and it is respectfully submitted that such potential amendments are unnecessary, in view of the claim recitations that the oligonucleotides have "predetermined" sequences. The cited prior art quite clearly fails to disclose or suggest making an apparatus having oligonucleotides containing predetermined sequences, such that the complete sequence of each and every useful immobilized oligonucleotide probe on the array surface is known.

Accordingly, this ground of rejection is deemed to be overcome.

Claims 17 and 23 are rejected under 35 U.S.C. 103 as unpatentable over U.S. Patent No. 4,994,373 to Stavrianopoulos et al. in view of WO 85/01051 to Molecular Biosystems and further in view of Cooke et al. This ground of rejection is respectfully traversed as discussed during the interview.

Cooke et al. fails to remedy the deficiencies of Stavrianopoulos et al. and WO 85/01051 discussed above. Cooke et al. fails to disclose or suggest an apparatus having covalently linked oligonucleotides containing predetermined sequences.

Accordingly, this ground of rejection is deemed to be overcome.

Claims 17 and 18 are rejected under 35 U.S.C. 103 as unpatentable over U.S. Patent No. 4,994,373 to Stavrianopoulos et al. in view of WO 85/01051 to Molecular Biosystems and further in view of Suggs et al. This ground of rejection is respectfully traversed as discussed during the interview.

Suggs et al. fails to remedy the deficiencies of Stavrianopoulos et al. and WO 85/01051 discussed above. Suggs et al. fails to disclose or suggest an apparatus having covalently linked oligonucleotides containing predetermined sequences.

Accordingly, this ground of rejection is deemed to be overcome.

Applicant expresses appreciation for the Examiner's indication of allowable subject matter in claims 20, 24, 25, 31 and 32.

However in view of the foregoing, it is believed that each ground of rejection set forth in the Official Action of all claims has been overcome and that the application is now in condition for allowance. Accordingly, such allowance is solicited.

C. Regarding No Potential Interference of Southern Claims with US 5,744,305

During the interview, there was a discussion why the claims of this application should not be considered to interfere with the claims of US 5,744,305. The following is a detailed discussion of this issue, which is presented at this time in an effort to avoid an interference with the '305 patent and to expedite allowance.

Two-Way Test for Interference-in-Fact
Application Serial No. 09/422,803 Compared to US 5,744,305

An interference exists if the subject matter of a claim of one party would, if prior art, have anticipated or rendered obvious the subject matter of a claim of the opposing party and vice versa. See 37 CFR § 41.203(a) and MPEP § 2301.03. This rule and the MPEP set forth the two-way test for patentability, which is as follows:

Assuming that party A's claim is prior art, party A's claim would either anticipate or render obvious party B's claim and assuming that party B's claim is prior art, party B's claim would anticipate or render obvious party A's claim. If this test is met, then an interference in fact exists.

As shown below, the two-way test is not met. Therefore an interference-in-fact would not exist between the claims of Southern Serial No. 09/422,803 and Fodor US Patent No. 5,744,305.

Independent Claims

SN 09/422,803	US 5,744,305
Claim 17. An apparatus for analyzing a polynucleotide, the apparatus comprising an impermeable support segregated into a least two defined cells, the cells having oligonucleotides **containing predetermined sequences covalently attached** thereto, wherein the **sequence of the oligonucleotides of a first cell is different from the sequence of the oligonucleotides of a second cell**, and wherein **a terminal nucleotide of each oligonucleotide is covalently attached to the surface of the support**. [Emphasis added.]	1. An array of oligonucleotides, the array comprising: a planar, non-porous solid support having at least a first surface; and a plurality of different oligonucleotides attached to the first surface of the solid support at **a density exceeding 400 different oligonucleotides/cm^2**, wherein **each of the different oligonucleotides is attached** to the surface of the solid support in a **different predefined region, has a different determinable sequence**, and is at least 4 nucleotides in length. [Emphasis added.]
Claim 26. An apparatus for analyzing a polynucleotide, the apparatus comprising an impermeable glass plate with patches of microporous glass, the patches defining cells of an array, each cell having oligonucleotides **containing predetermined sequences covalently attached** thereto, wherein **the sequence of the oligonucleotides of a first cell is different from the sequence of the oligonucleotides of a second cell**. [Emphasis added.]	15. An array of polynucleotides, the array comprising: a planar, non-porous solid support having at least a first surface; and a plurality of different polynucleotides attached to the first surface of the solid support at a **density exceeding 400 different polynucleotides/cm^2**, wherein **each of the different polynucleotides is attached** to the surface of the solid support in a **different predefined region, has a different determinable sequence**, and is at least 4 nucleotides in length. [Emphasis added.]

The Southern application contains claims 17-21 and 23-44. Claims 17 and 26 are independent. Claims 18-21, 23-25, and 33-36 depend, or ultimately depend, from independent claim 17. Claims 27-32 and 37-44 depend from independent claim 26.

The Fodor patent contains claims 1-26. Claims 1 and 15 are independent. Claims 2-14 depend from claim 1 and claims 16-26 depend from claim 15. Independent claims 1 and 15 and those dependent thereon differ in only one respect. Claim 1 recites oligonucleotides whereas claim 15 recites polynucleotides.

I. Significant differences between Southern's claims and Fodor's patent claims

A. The nucleotides of all the Southern claims have predetermined sequences whereas the nucleotides of all the Fodor claims have determinable sequences.

Both Southern's claim 17 and claim 26 recite "predetermined sequences"—that is the complete sequence of each and every oligonucleotide probe on the array surface is known. See the Examiner's Statement of Reasons for Allowance, which appears on pages 4 and 5 of the Notice of Allowability (Paper No. 26 of Southern application, Serial No. 08/925,676, now US Patent No. 6,054,270). The statement reads, in part, as follows:

> Lastly, it is noted that the phrase "predetermined sequences" as present in several of the instant claims, such as claim 36, line 5, for example, is interpreted to require that the complete sequence of each and every oligonucleotide probe on the array surface is known during the practice of the instant claim steps.

This "predetermined sequences" recitation also appears in claims 18-21, 23-25, and 33-36, because these claims depend from, or ultimately depend from, claim 17 and in claims 27-32, and 37-44, because these claims depend from, or ultimately depend from, claim 26.

On the other hand, Fodor's independent claims 1 and 15 recite that each of the different nucleotides has "a different determinable sequence"—That is capable of being determined. This recitation also appears in dependent claims 2-14, which depend from independent claim 1 and in dependent claims 16-26, which depend from independent claim 15.

B. The Southern claims are open to the possibility that two or more the cells may contain identical sequences of oligonucleotides, whereas the Fodor claims recite that each predefined region contains an oligonucleotide, which is different from any oligonucleotide in each of the other predefined regions.

Southern's claims 17 and 26 recite that the sequence of the oligonucleotides of a first cell is different from the sequence of the oligonucleotides of a second cell. These claims leave open the possibility that two or more cells may contain identical sequences of oligonucleotides, for example, the sequences of the oligonucleotides of the second cell may be the same as the sequences of the oligonucleotides of a cell other than the first cell. This recitation also appears in dependent claims 18-21, 23-25, and 27-44.

Thus, all the Southern claims are open to the possibility that two or more the cells may contain sequences of oligonucleotides which are identical, whereas, as shown below, each predefined region of the Fodor claims contains an oligonucleotide, which is different from any oligonucleotides in the other predefined regions.

On the other hand, Fodor's independent claim 1 recites a plurality of different oligonucleotides (exceeding 400 oligonucleotides/cm^2) and Fodor's independent claim 15 recites a plurality of different polynucleotides (exceeding 400 polynucleotides/cm^2), where each of the different oligonucleotides and polynucleotides is attached to the support in a different predefined region, i.e., all the oligonucleotides and all the polynucleotides of Fodor's claims 1 and 15 are different and none can be the same in two or more predefined regions. This recitation also appears in dependent claims 2-14 and 16-26. Thus, the Fodor claims 1-14 require an array of different oligonucleotides and claims 15-26 require an array of different polynucleotides.

C. Each nucleotide of the Southern claims is covalently attached to a support whereas the nucleotides of the Fodor claims are attached to a support.

Southern's claims 17 and 26 recites that each cell has oligonucleotides covalently attached thereto. This recitation also appears in dependent claims 18-21, 23-25 and 33-36, which depend from, or ultimately depend from, claim 17 and in dependent claims 27-30 and 37-44, which depend from claim 26. Thus, all the Southern claims require covalent attachment.

On the other hand, Fodor's independent claim 1 and dependent claims 2-14 recite that the oligonucleotides are attached to a surface and Fodor's independent claim 15 and dependent claims 16-26 recite that the polynucleotides are attached to a surface. Fodor, col. 1, lines 18-20, states that receptors may be attached covalently or noncovalently to a binding member, either directly or via a specific binding substance.

Thus, the Fodor claims embrace any type of attachment (covalent or noncovalent).

D. Each nucleotide of the Southern claims is covalently attached to an impermeable support or to a microporous glass support whereas each nucleotide of the Fodor claims is attached to a "different predefined region."

Southern's claim 17 and its dependent claims 18-21, 23-25 and 33-36 recite that an oligonucleotide is bound to an "impermeable support." Southern's claim 26 and its dependent claims 27-30 and 37-44 recite that an oligonucleotide is attached to a patch of microporous glass.

On the other hand, Fodor's independent claim 1 and dependent claims 2-14 recite that each oligonucleotide is attached to a different predefined region and Fodor's independent claim 15 and dependent claims 16-26 recite that each polynucleotide is attached to a different predefined region. Fodor, cool 6, lines 51-53, defines a predefined region as "a localized area on a surface which is, was, or is intended to be activated for formation of a polymer."

Thus, the Southern claims merely require a support or a microporous glass to which an oligonucleotide is attached, whereas Fodor's claim are more specific in requiring attachment at a predefined region, which is defined in the Fodor specification as a localized area on a surface, which is, was or is intended to be activated for the formation of a polymer.

E. The Southern claims do not recite any density range for the oligonucleotides attached to the impermeable surface whereas the Fodor claims recite a density exceeding 400 different oligonucleotides/cm^2.

All the Southern claims do not recite any density limitation. On the other hand, Fodor's claims 1-26 recite that a plurality of different oligonucleotides or polynucleotides are attached to the first surface of the solid support at a density exceeding 400 different oligonucleotides/cm^2.

This density limitation in the Fodor claims is a material limitation, necessary to patentability, as shown in the prosecution history of the '305 patent.

During *ex parte* prosecution, Fodor filed a Supplemental Preliminary Amendment (Paper No. 8) introducing new independent claim 57 and dependent claims 58-62. Independent claim 57 included the recitation "a density of greater than 500 groups/cm^2."

Thereafter, Fodor filed a Second Supplemental Preliminary Amendment (Paper No. 9) canceling claims 57-62 and adding independent claim 63 and dependent claims 64-76. Independent claim 63 included the recitation "a density of greater than 500 groups/cm^2."

On August 21, 1996, the examiner mailed an Office Action (Paper No. 13) wherein claims 63-77 were rejected for formal reasons under 35 U.S.C. § 112. Significantly, the examiner stated at pages 3 and 4 as follows:

> 4. Claims 63-77 are free of prior art. The claims distinguish over the prior art of record because they are drawn to an array comprising a support having at least a surface to which attached at least 500 groups of polymer sequences per cm^2. The closest prior art is Khrapko et al. which proposes that 64,000 oligonucleotides be placed on a solid support in regions of 2 mm dots; at this scale 1,000 oligonucleotide regions would occupy 40 cm^2.

In the Amendment (Paper No. 15), filed September 23, 1996, Fodor responded to the § 112, second paragraph rejection and further amended the density limitation of claim 63 to read "a density of at least 400 different polymer sequences/cm^2, wherein each of the different polymer sequences is made up of the same basis set of monomers." With respect to the amendment of claim 63, Fodor argued, in part, as follows:

> It is also alleged that the claims are vague because it is allegedly unclear as to the number of polymer sequences within each group. It is then asserted that absent this limitation, the density of polymer sequences cannot be determined.
>
> Applicants respectfully point out that it is not the density of individual polymer sequences within a particular predefined region that is recited within the claim, but the density of "different polymer sequences" on the surface of the substrate, i.e., the number of different polymer sequences that one can synthesize in a given area. It is this ability to screen large numbers of different polymers on a small surface area that is a source of great value for the present invention.

> Applicants have also amended claim 63, herein to recite that the different polymer sequences are attached to the surface of the substrate at a density of "400 different polymer sequences/cm^2." Applicants believe that this amendment, coupled with Applicants' explanation, above, will obviate the rejection.

Amendment of September 23, 1996 (Paper No. 15), page 5, the last three paragraphs.

In the Office Action, mailed January 23, 1997, the examiner rejected claim 63 under 35 U.S.C. § 112, first paragraph, for lack of enablement.

In Amendment/Response to the January 23, 1997 Office Action (Paper No. 23), filed July 23, 1997, Fodor responded to the rejection and further amended the density recitation of claim 63 to read "a density of 400 oligonucleotides/cm^2, wherein each of the different oligonucleotides." Fodor also added new parallel independent claim 80, which differs from claim 63, by reciting polynucleotides instead of oligonucleotides.

On September 15, 1997, the examiner mailed a Notice of Allowability, which included the Examiner's Statement of Reasons for Allowance. The Examiner's statement is as follows:

> Claims 63-66, 68-77 and 80-91 are allowable over the prior art of record. The claims are patentably distinguished over the prior art because the prior art does not teach or suggest an array of oligonucleotides or polynucleotides comprising a planar, non-porous solid support having surfaces to which attached is a plurality of different oligonucleotides or polynucleotides, each of which having a length of at least 4 nucleotide units, and which is placed at a density of 400 polymers per cm^2 in a different predefined region. The closest prior art is Khrapko et al., which proposes to place 64,000 different oligonucleotides on a solid support in 2 mm dot; at this scale about 1,000 oligonucleotides would occupy 40 cm^2, or 25 polymers per cm^2, the density of which would be much less than that of the claimed array.

The Notice of Allowability (Paper No. 26), the paragraph bridging pages 2 and 3

The Fodor file history makes clear that the examiner considered that the density limitation is a material limitation, a limitation that is necessary for patentability of its

claims. This density limitation is not present in any of the Southern claims. Where an application claim does not include a material limitation of a patent claim, the application claim is not directed to the same or substantially the invention as the patent claim. See Parks v. Fine, 227 USPQ 432, 434 (Fed. Cir. 1985) ("The record establishes that the "absence of a catalyst" limitation in the Parks patent claims and the contested counts is material. Parks inserted this limitation in his claims in response to, and to avoid, a rejection by the examiner.") See also the MPEP § 2301.03, which sets forth examples of the two-way test.

II. Application of the two-way test to the Southern claims, assuming that the claims are prior art to Fodor.

In Section I, supra, Southern pointed out five significant differences between the Southern claims and the Fodor claims. Below, Southern analyzes four of these five differences and applies each of them to the two-way patentability test. From this, it should be clear that the Southern claims, if they were prior art, would not anticipate or render obvious Fodor's claims 1-26. Thus, one branch of the two-way test is not met and there is no interference-in-fact.

A. The nucleotides of the Southern claims have predetermined sequences whereas the nucleotides of the Fodor claims have determinable sequences.

a). Assuming that Southern's claims 17-21 and 23-44 were prior art, these Southern claims would not anticipate Fodor's claims 1 to 26.

Claims 17-21 and 23-44 recite that the oligonucleotides have predetermined sequences, i.e., the complete sequence of each and every oligonucleotide on the array surface is known. See the Examiner's Statement of Reasons for Allowance, supra. Nowhere do the Southern claims teach that each nucleotides has "a different determinable sequence," that is, a sequence capable of being determined, as recited in Fodor's claims 1-26. For that reason, the Southern claims would not anticipate the Fodor claims.

b). Assuming that Southern's claims 17-21 and 23-44 were prior art, the Southern claims would not render obvious Fodor's claims 1 to 26. While there may be prior art which may show oligonucleotides containing different determinable sequences, there is no motivation to modify the Southern claims with this prior art.

B. The Southern claims are open to the possibility that two or more the cells may contain identical sequences of oligonucleotides, whereas the Fodor claims recite that each predefined region contains an oligonucleotide, which is different from any oligonucleotide in each of the other predefined regions.

a). Assuming that Southern's claims 17-21 and 23-44 were prior art, these Southern claims would not anticipate Fodor's claims 1 to 26.

Claims 17-21 and 23-44 recite that the sequence of the oligonucleotides of a first cell is different from the sequence of the oligonucleotides of a second cell. These claims leave open the possibility that two or more cells may contain identical sequences of their oligonucleotides, for example, the sequences of the oligonucleotides of the second cell may be the same as the sequences of the oligonucleotides of a cell other than the first cell. Nowhere do these Southern claims teach that the sequence of the oligonucleotides of each cell must be different from the sequence of the oligonucleotides of the other cells, as recited in Fodor's claims 1-26. For that reason, the Southern claims would not anticipate the Fodor claims.

b). Assuming that Southern's claims 17-21 and 23-44 were prior art, these Southern claims would not render obvious Fodor's claims 1 to 26. While there may be prior art which may teach that two or more the cells may contain sequences of oligonucleotides which are identical, there is no motivation to modify the Southern claims, which are open to the possibility that at least two different cells may have identical sequences of oligonucleotides, with this prior art.

C. Each nucleotide of the Southern claims is covalently attached to an impermeable support or to a microporous glass support whereas each nucleotide of the Fodor claims is attached to a "different predefined region."

a). Assuming that Southern's claims 17-21 and 23-44 were prior art, these Southern claims would not anticipate Fodor's claims 1 to 26.

Southern's claims 17-21 and 23-44 recite that the oligonucleotides are covalently attached to an impermeable support or a microporous glass support. The Southern claims do not teach that each oligonucleotide is attached to a predefined region which is, was or is intended to be activated for the formation of a polymer, as recited in Fodor's claims 1-26. For that reason, the Southern claims would not anticipate the Fodor claims.

b). Assuming that Southern's claims 17-21 and 23-44 were prior art, these Southern claims would not render obvious Fodor's claims 1 to 26. While there may be prior art which may show activation of the surface for the formation of a polymer, as required by the Fodor claims, there is no motivation to modify the Southern claims with this prior art.

D. The Southern claims do not recite any density range for the oligonucleotides whereas the Fodor independent claims recite a density range exceeding 400 different oligonucleotides/cm^2.

a). Assuming that Southern's claims 17-21 and 23-44 were prior art, these Southern claims would not anticipate Fodor's claims 1 to 26.

As noted, the Southern claims do not recite any density range for the oligonucleotides. On the other hand, Fodor's claims 1-26 recite that a plurality of different oligonucleotides or polynucleotides are attached to the first surface of the solid support at a density exceeding 400 different oligonucleotides/cm^2. For that reason, the Southern claims would not anticipate the Fodor claims.

b). Assuming that Southern's claims 17-21 and 23-44 were prior art, these Southern claims would not render obvious Fodor's claims 1 to 26. While there may be prior art which may show the density limitations recited in the Fodor claims, there is no motivation to modify the Southern claims with this prior art. Further, as shown by the prosecution history of the Fodor patent, the density limitation is a material limitation, which is necessary for the patentability of the Fodor claims.

E. As shown above, all the Southern claims recite four features, not found in Fodor's claims, i.e., (1) the nucleotides of the Southern claims have predetermined sequences whereas the nucleotides of the Fodor claims have determinable sequences, (2) the Southern claims are open to the possibility that two or more the cells may contain identical sequences of their oligonucleotides, whereas the Fodor claims recite that each predefined region contains an oligonucleotide, which is different from any oligonucleotide in each of the other predefined regions, (3) each nucleotide of the Southern claims is covalently attached to an impermeable support or to a microporous glass support whereas each nucleotide of the Fodor claims is attached to a "different predefined region," and (4) the Southern claims do not recite any density limitation

whereas the Fodor independent claims recite a density exceeding 400 different oligonucleotides/cm^2. Because of these claim recitations, the Southern claims, assuming that they are prior art to the Fodor claims, would not anticipate or render obvious the Fodor claims.

For the foregoing reasons, Southern respectfully submits that one branch of the two-way test is not met. Thus, an interference-in-fact does not exist between the Southern claims and the Fodor claims. Notwithstanding this, Southern has shown below that the second branch of the two-way test is also not met.

III. Application of the two-way test to the Fodor Claims, assuming that the Fodor claims are prior art to the Southern claims

In Section I, supra, Southern pointed out five significant differences between the Southern claims and the Fodor claims. In Section II, supra, Southern showed the Southern claims, assuming that they are prior art to the Fodor claims, would not anticipate or render obvious the Fodor claims. Conversely, assuming that the Fodor claims were prior art, the Fodor claims would not anticipate or render obvious Southern's claims 17-21 and 23-44, because (1) the oligonucleotides and polynucleotides of the Fodor claims have determinable sequences whereas the nucleotides of the Southern claims have predetermined sequences and (2) the nucleotides of the Fodor claims are attached to a support whereas the nucleotides of the Southern claims are covalently attached to a support.

A. The nucleotides of the Fodor claims have determinable sequences whereas the nucleotides of the Southern claims have predetermined sequences.

a). Assuming that Fodor's claims 1 to 26 were prior art, these Fodor claims would not anticipate Southern's claims 17-21 and 23-44.

The Fodor claims recite that each of the different nucleotides has "a different determinable sequence"—that is, capable of being determined. Nowhere do these claims teach that each nucleotides has a "predetermined sequence," that is, the complete sequence of each and every oligonucleotide on the array surface is known. See the Examiner's Statement of Reasons for Allowance, supra. For that reason, the Fodor claims would not anticipate the Southern claims 17-21 and 23-44.

b). Assuming that Fodor's claims 1 to 26 were prior art, the Fodor claims would not render obvious Southern claims 17-21 and 23-44. While there may be prior art which may show oligonucleotides containing different predetermined sequences, there is no motivation to modify the Fodor claims with this prior art.

B. The Fodor claims recite that each predefined region contains an oligonucleotide, which is different from any oligonucleotide in each of the other predefined regions, whereas the Southern claims are open to the possibility that two or more of the cells may contain identical sequences of oligonucleotides.

a). Assuming that Fodor's claims 1 to 26 were prior art, these Fodor claims would not anticipate Southern's claims 17-21 and 23-44.

The Fodor claims recite that each predefined region contains an oligonucleotide, which is different from any oligonucleotide in each of the other predefined regions. Nowhere do these claims teach that the sequence of the oligonucleotides in a first predefined region can be identical to the sequence of the oligonucleotides in another predefined region. For that reason, the Fodor claims would not anticipate the Southern claims 17-21 and 23-44.

b). Assuming that Fodor's claims 1 to 26 were prior art, the Fodor claims would not render obvious Southern claims 17-21 and 23-44. While there may be prior art which may show different regions can contain oligonucleotides having identical sequences, there is no motivation to modify the Fodor claims with this prior art.

C. The nucleotides of the Fodor claims are attached to a surface whereas the nucleotides of the Southern claims are covalently attached to a surface.

a). Assuming that Fodor's claims 1 to 26 were prior art, these Fodor claims would not anticipate Southern's claims 17-21 and 23-44.

Fodor's claims 1-26 recite that the nucleotides are attached to a surface. Fodor, col. 1, lines 18-20, states that receptors may be attached covalently or noncovalently to a binding member, either directly or via a specific binding substance. Thus, the Fodor claims embrace all types of attachment (covalent or noncovalent). On the other hand, Southern's claims require that the cells have "oligonucleotides covalently attached thereto," a species of the genus of all types of attachment (covalent or noncovalent) to a

surface. The genus in this case would not anticipate the species. Thus, the Fodor claims would not anticipate the Southern claims 17-21 and 23-44.

b). Assuming that Fodor's claims 1 to 26 were prior art, these Fodor claims may render obvious Southern's claims 17-21 and 23-44. While there may be prior art which may teach covalent attachment, Southern submits that there is no motivation to modify the general type of attachment of the Fodor claims with the covalent attachment, as recited in the Southern claims. Thus, the Fodor claims would not render obvious these Southern claims.

For the foregoing reasons, the second branch of the two-way test is also not met.

IV. Conclusion

Based on the foregoing discussion, Southern respectfully submits that since both branches of the two-way test for an interference-in-fact are not met. Consequently, an interference-in-fact would not exist between the Southern claims and the Fodor patent claims.

D. New Information Disclosure Statement

There is submitted concurrently herewith an Information Disclosure Statement. The IDS cites references of which the Applicant has become aware. The IDS further includes copies of the latest Office Actions in copending application Serial Nos. 09/422,804 and 10/115,077. The record should also reflect the existence of copending application 10/772,467 which was discussed during the interview in which no Action has yet issued.

Favorable reconsideration and allowance is solicited.

Respectfully submitted,

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